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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,297	03/26/2004	Luigi Tallone	36030312 US02	9276

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EXAMINER	
CHIEM, DINH D	
ART UNIT	**PAPER NUMBER**
2883	

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/810,297	TALLONE ET AL.	
	Examiner	Art Unit	
	Erin D Chiem	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Brian Healy
Primary Examiner

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 6, and 9 – 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Doerr et al. (US 6,275,317 B1).

3. Regarding claim 1, 2, 9 – 14, Doerr et al. disclosed an optical transmitter (**100**) in Figure 1 having a silicon optical bench substrate (**120**), (col. 4 line 54-61), and (col 7, line 26-30), with an array of input optical fibers (w_1, - w_6), an output optical waveguide in the same plane (**125**). Interposed between the input optical fibers and output optical fibers is an optical isolator (**140**), the two ball lenses (**155, 160**) set inside pyramid-shaped pits (col 8, line 34 – 36), and having the isolator interposed in between the two ball lenses. a length of fiber on the substrate (**125**), and is connected to the output fiber with a ferrule (**135**). Regarding claim 10, Doerr et al. further explain that the optical isolator send the focused light from the collimator to the amplifier/modulator (col 10, line 17-20). Regarding claim 11, although Doerr et al. do not explicitly show a filter in the drawings; however, in column 15, line 1-6, Doerr et al. indicate that through experimentation a 1.87 Ghz electronic filter was used to produce the result shown in Figure 22 (A-J). Regarding claim 14, Doerr et al disclose using a ball lens (**155**, **160**) to collimate and project an optical radiation. The ball lens is meets the claim of being at

least one optical component comprises a symmetrical optical system having an internal image.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 3 – 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1) in view of Hehmann (US 6,0,81,635). Claims 3 and 4 are dependent on independent claim 1, and Doerr et al. disclosed all the limitations of claim 1, but does not disclose the respectively v-grooves having the same geometry. Hehmann (US 6,0,81,635) discloses having two v-grooves (**V1** ,**V2**) so that their positions are precisely fixed. This indicates that the two grooves must have the same symmetry in order for the precise alignments of the two fibers (**LWL1, LWL2**). The perfect alignment will help a person having ordinary skill in the art to modify the optical transmitter of Doerr et al. to implement a single input fiber rather than using an array of fibers and a combiner. Since Doerr et al. and Hehmann are both from the same field of endeavor; the purpose disclosed by Hehmann would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have two v-grooves etched onto the

silicon optical bench for the alignment of one input fiber with the one output fiber in the case one want to implement one a single input rather than an array of inputs.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al (US 6,275,317 B1) in view of Drake (US 5,999,303). Doerr et al. discloses all of the limitations of independent claim 1 but does not disclose the limitation of using optical fibers from the same fiber batch for the input and length of fiber on the substrate. Drake (US 5,999,303) discloses using input and output fibers from the same manufacturing batch having very precise lengths for both lengths of input and output fibers (col 16, line 3-6) for the purpose of maintaining the same fiber characteristics in an optical system. Since Doerr et al. and Drake are both from the analogous field of endeavor; the purpose disclosed would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use optical fibers that were drawn from the same batch in implementing on one optical system to maintain the closely similar characteristics of the optical fibers such as having substantially same core index, cladding index, low level of impurities, etc.

7. ~~Regarding claim 6, Doer et al. discloses of coating the output facet of the optical amplifier/modulator with TiO_2 anti-reflective coating to minimize reflections between the optical amplifier/modulator and the output fiber (Col. 10, line 27 – 30).~~ Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1). Doerr et al. discloses of coating the output facet of the optical amplifier/modulator with TiO_2 anti-reflective coating to minimize reflections between the optical amplifier/modulator and the output fiber (Col. 10, line 27 – 30), but does not disclose

applying the anti-reflective coating on the respective ends of the length of fiber and the output fiber. Since the purpose of applying the anti-reflective coating on the respective ends facets of amplifier/modulator or fibers is for index of refraction matching to minimize scattering of optical radiation, it is obvious to coat the adjoining ends of two lengths of fibers instead of an end facet of an amplifier/modulator and a length of output fiber.

8. Claim 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr et al. (US 6,275,317 B1) in view of Tabuchi (US 5,611,006). Doerr et al. discloses all the limitations of claim 1, but does not disclose having the output waveguide and the length of optical waveguide on the substrate aligned along an input-to output propagation path, and furthermore, the end surfaces of the optical components arrangement are offset to the perpendicular to said input-to-output propagation path, the propagation path of radiation through said through at least one optical component is at an angle with respect to the main input-to-output propagation path. Tabuchi discloses arranging the incident planes of the optical-isolator in parallel with the surface of the silicon substrate and inclined by a predetermined angle relative to the main optical axis (col 4, line 19-23) for the purpose of reducing back reflection of the optical signal along to propagating axis. Since Doerr et al. are both from the same field of endeavor; the purpose disclosed by Tabuchi would have been recognized in the pertinent art of Doerr et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to offset the alignment of at least one optical component

in the mounting arrangement to reduce back reflection of the transmitted optical radiation.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The optical mounting arrangement claimed by the applicant is well known in the art as seen in the references of Doerr et al., Fairchild et al. (US 5,956,441), Hehmann, and Tabuchi. Doerr et al. teaches a silicon optical bench arrangement with the mounting of an array of input optical fibers feeding into a combiner and then transmit the optical radiation through a series of optical components of ball lenses and optical isolators. Hehmann, Fairchild et al. and Tabuchi disclose similar inventions with small variations of arrangement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin D Chiem
Examiner
Art Unit 2883

EDC

Brian Healy
Primary Examiner